Amendments to Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently Amended) A method for processing a semiconductor topography, comprising:

etching a stack of layers within a single etch chamber, wherein the single etch chamber is configured for etching a material comprising silicon, and wherein the stack of layers comprises:

an anti-reflective layer;

a nitride layer arranged beneath and in contact with the antireflective layer;

an underlying layer arranged beneath the nitride layer; and

wherein said etching a stack of layers comprises etching one or more layers in the stack with a different etch chemistry than used for etching other layers in the stack; and

introducing a first noble gas and a second noble gas, each heavier than helium, into said etch chamber during said etching, wherein the first and second noble gases differ from one another, and wherein each noble gas is introduced for assisting the etching of a different layer in the stack of layers.

2. (Currently Amended) The method of claim 1, wherein said introducing comprises introducing the first noble gas during said etching of the anti-reflective layer and introducing the second noble gas during said etching of the nitride layer.

3. (Currently Amended) The method of claim 2, wherein said introducing further comprises introducing ~~the~~ a third noble gas during said etching of the underlying layer.

4. (Currently Amended) The method of claim 1, wherein ~~said~~ the first noble gas comprises argon.

5. (Original) The method of claim 1, wherein said nitride layer comprises silicon nitride.

6. (Original) The method of claim 1, wherein said anti-reflective layer comprises organic materials.

7. (Original) The method of claim 6, wherein said underlying layer comprises a material comprising silicon.

8. (Original) The method of claim 7, wherein said underlying layer comprises polysilicon.

9. (Original) The method of claim 7, wherein said underlying layer comprises monocrystalline silicon.

10. (Original) The method of claim 7, wherein said underlying layer comprises silicon-germanium.

11. (Currently Amended) A method for processing a semiconductor topography, comprising:

etching an anti-reflective layer in a low density plasma etch chamber with a first etch chemistry, wherein the low density plasma etch chamber is configured for etching a material comprising silicon;

etching a cap layer in the etch chamber with a second etch chemistry, wherein the cap layer is arranged beneath and in contact with the anti-reflective layer;

etching a lower layer in the etch chamber with a third etch chemistry, wherein the lower layer is arranged beneath the cap layer, and wherein at least one of the first, second and third etch chemistries differs from the other etch chemistries; and

introducing a first noble gas heavier than helium into said etch chamber during said etching of the anti-reflective layer; and

introducing a second noble gas heavier than helium into said etch chamber during said etching of the cap layer, wherein the first and second noble gases differ from one another

12. (Canceled)

13. (Currently Amended) The method of claim ~~12~~ 11, wherein said cap layer comprises nitride.

14. (Currently Amended) The method of claim ~~12~~ 11, wherein said first and second noble gases are ~~the same~~ individually selected from a group comprising argon, xenon, neon, krypton and radon.

15. (Currently Amended) The method of claim ~~12~~ 11, further comprising:

patterning a photoresist layer arranged over the anti-reflective layer prior to etching the anti-reflective layer; and

removing remaining portions of the photoresist layer and anti-reflective layer subsequent to said etching the cap layer.

16. (Canceled)

17. (Currently Amended) The method of claim ~~12~~ 11, further comprising introducing a third noble gas heavier than helium into said etch chamber during said etching of the lower layer.

18. (Currently Amended) The method of claim 17, wherein at least two of said first, second and third noble gases differ from one another, and wherein ~~are~~ each of the first, second and third noble gases are selected from a group comprising argon, xenon, neon, krypton and radon.

19. -- 27. (Canceled)

28. (Previously Presented) The method of claim 11, wherein the step of introducing the first noble gas comprises introducing the first noble gas at a flow rate between approximately 10 sccm and approximately 100 sccm.

29. (Currently Amended) A method for processing a semiconductor topography, comprising etching a stack of layers in a single etch chamber with a sequence of different etch chemistries, wherein the single etch chamber is configured for etching a material comprising silicon, and wherein the step of etching the stack of layers comprises:

etching an antireflective layer with a first etch chemistry comprising a first noble gas heavier than helium; and

etching a silicon nitride layer, which is arranged beneath and in contact with the antireflective layer, with a second etch chemistry different than the first etch chemistry, wherein the second etch chemistry comprises a second noble gas, which is heavier than helium and different from the first noble gas.

30. (Previously Presented) The method of claim 29, wherein the step of etching the antireflective layer with the first etch chemistry comprises etching a portion of the silicon nitride layer.

31. (Canceled)

32. (Previously Presented) The method of claim 29, wherein the step of etching the stack of layers further comprises etching an underlying layer with a third etch chemistry different than the first and second etch chemistries.

33. (Previously Presented) The method of claim 32, wherein the third etch chemistry comprises a noble gas heavier than helium.

34. (Previously Presented) The method of claim 32, further comprising depositing a dielectric material within an opening etched into the underlying layer to form an isolation region having a dimension within a critical dimension specification.

35. (Previously Presented) The method of claim 32, wherein the step of etching the stack of layers comprises forming an interconnect line having a dimension within a critical dimension specification.

36. (Previously Presented) The method of claim 32, further comprising:

thermally growing the silicon nitride layer upon the underlying layer; and

depositing the anti-reflective layer upon and in contact with the thermally grown silicon nitride layer prior to etching the stack of layers.

37. (Previously Presented) The method of claim 17, wherein at least one of said first, second and third noble gases differs from the remaining noble gases.